

Abrines, David

From: Bergman, Erica <Erica.Bergman@dep.state.nj.us>
Sent: Tuesday, December 31, 2013 12:08 PM
To: Azzam, Nidal
Cc: Jean, Robert
Subject: FW: Solvay - PFC issues update

Nidal,
See update below, fyi...

Erica Bergman
NJDEP - Bureau of Case Management
401 E. State Street - Mail Code 401-05
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Trenton, NJ 08625-0420
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609-292-7406

From: Bergman, Erica
Sent: Tuesday, December 31, 2013 11:54 AM
To: Maybury, Steve
Cc: Migliarino, Maurice; Post, Gloria; Fell, Karen; Krietzman, Sandy; Buchanan, Gary; Kloo, Ken; Howitz, Wayne
Subject: Solvay - PFC issues update

Steve,
Mitch Gertz from Solvay contacted me today to say that yesterday Solvay received a letter of Intent to Sue from Brad Campbell on behalf of Paulsboro. Mark Pedersen and BCM have been copied, but I haven't seen the letter yet. In addition to wrongful exposure to PFCs, Paulsboro alleges years of inaction on the part of DEP and EPA's unlawful delegation of the RCRA program to DEP. I will let you know when I get the letter for more details. Mitch G. said that Solvay is surprised in light of their attempt to be proactive and he reminded me that they have a meeting with Paulsboro on Jan 6 to discuss Paulsboro wells sampling results.

Mitch G. also said that BCM will be copied on their letter/submittal of effluent sampling results to the NJPDES DSW program which will include notification that Solvay intends to install carbon filtration on pumped groundwater prior to the water entering their treatment plant (PFCs found in groundwater). It will prevent untreated PFCs from being discharged to the Delaware and to the Gloucester Co Utilities Auth (they now incinerate). I don't know what levels are present in the effluent, but this should be in their report. These results will officially link the Solvay plant to PFC contamination.

The South Jersey Times posted a 12/25/13 article on Paulsboro/W Deptford water supplies and cited Delaware Riverkeeper comments on Solvay's sampling plan (unacceptable, deficient, etc). http://www.nj.com/gloucester-county/index.ssf/2013/12/more_thorough_look_at_paulsboro_west_deptfords_drinking_water_needed_delaware_riverkeeper_network_say.html

Abrines, David

From: Tracy Carluccio <tracy@delawariverkeeper.org>
Sent: Friday, December 20, 2013 3:31 PM
To: erica.bergman@dep.state.nj.us
Cc: Azzam, Nidal
Subject: DRN Comments and Review of Solvay Work PFC Plan
Attachments: DRN letter to NJDEP re Solvay Sampling Plan 12.13.pdf; Demicco Solvay Final 12 19 w Att (3).pdf

Dear Erica,

Enclosed please find Delaware Riverkeeper Network's comments and Work Plan review of "Perfluorinated Compounds Work Plan, West Deptford, NJ, Plant Prepared for Solvay Specialty Polymers USA, LLC by Integral Consulting Inc., 11.15.2013". These comments are submitted by Delaware Riverkeeper Network as a recognized stakeholder in NJDEP's Solvay Work Plan review process.

Thank you,

Tracy

Tracy Carluccio

Deputy Director

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Remember the River

To remind us all to Remember the River in every decision we make;

And to hold our elected officials accountable to do the same.



December 20, 2013

Erica Bergman
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Trenton, New Jersey 08625

Re: Perfluorinated Compounds Work Plan, West Deptford, New Jersey, Plant; Prepared for Solvay Specialty Polymers USA, LLC by Integral Consulting Inc., November 15, 2013

Dear Ms. Bergman,

We are submitting these comments as a named stakeholder to the Solvay Work Plan process. Enclosed is a report prepared by Peter Demicco of Ground Water Associates for Delaware Riverkeeper Network (DRN) ("Demicco Report").

We find the Perfluorinated Compounds Work Plan ("Work Plan") deficient. We briefly review our major concerns here and refer you to the Demicco report for technical and specific analysis of the plan's failings.

The Work Plan does not have a worthy objective

The Work Plan states that it will expedite, validate, and report results but makes no commitment to analyze and apply the data to reach a goal of understanding the fate and transport of perfluorinated compounds (PFC) from the facility and its operations. The purpose of the Work Plan should be to investigate the release of PFCs in order to identify exposure of the public and the environment to contamination. The ultimate point should be to clean up the pollution caused by Solvay and the other companies that operated the site since the inception of the use of PFCs at the facility.

The Work Plan is too limited to understand the distribution and fate of PFCs from the Solvay facility operations

Media: The media proposed to be sampled must be expanded. Critical media include: soil and groundwater samples to validate modeling and on site soils from the manufacturing facility area; private water supplies, small as well as large public water supplies, agricultural and other wells;

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additional onsite monitoring wells based on current Resource Conservation and Recovery Act (RCRA) findings at the facility; sludge or other materials from the remediation of contamination under the ongoing RCRA action on site; sludge from wastewater treatment systems; soils where sludges may have been deposited including stockpiles and spreading on agricultural fields; leachate and/or groundwater from landfills where waste may have been deposited; private and public water wells in Critical Area 2; pathways from the incinerator that was used; dredge material from the proximate Delaware River that is deposited on the property and the groundwater beneath the dredge spoils; and sediment and core sampling downstream of industrial manufacturing area on Little Mantua Creek. Without investigation of these additional media the Work Plan has little practical value and accurate conclusions cannot be drawn.

Air dispersion and deposition model: The expanse to be included in the model is too small to yield reliable results. The region spanning from Solvay to Monroe Township municipal wells and also to New Jersey American wells to the south identified in the Demicco Report must be included in the model. Additionally, soil sampling and private as well as public water supply sampling must be done within these spanned regions and on the Solvay facility site to verify the model. This region encompasses 16 miles in one direction (south and east) and 9 miles in the other direction (south and west), respectively. Furthermore, if data from water sampling in other directions or regions show the presence of PFCs (and specifically Perfluorononanoate acid (PFNA)), these other regions must also be included in the sampling regime.

Complex and dynamic conditions: Over time, environmental exposure to PFCs from the Solvay facility and its operations has changed and will continue to change. The forces of weather and human manipulation of the environment such as construction, river and stream dredging, the stockpiling of spoils or residues from facility operations, the pumping of groundwater for on site or off site remedial activities (including the onsite groundwater treatment system), and discharges to surface waters are some of the activities that have and will continue to impose changes of the distribution of PFCs by Solvay.

These changes result in soil disturbance, soil erosion, sedimentation and stormwater runoff, changes to vegetation and land cover, concentration and synergistic mixing of elements, groundwater flow alterations, new emissions to air and deposition on water and soil, and variations in quality, flow and hydrologic regime of surface waters and connected water features such as wetlands. These dynamic conditions can be reasonably predicted and modeled with a goal of tracking PFCs to understand changes in exposure and resulting health and environmental effects. For instance, age analysis of sediment that is sampled, a groundwater flow and transport model, and other rigorous analytical mechanisms must be employed.

The presence of PFCs and the extraordinarily high levels of PFNA found in Paulsboro's water supply militate for urgent but thorough action to identify the extent of exposure of the public and the environment to contamination. The raw water sampled in 2009 at 96 ng/L in Paulsboro and the even more shocking level of 140 ng/L in raw water and 150 ng/L in finished water in the Paulsboro drinking water system (Items # 2954 and 2966 respectively, NJDEP database entitled "OPRA NJDEP WQ Copy of PFC all data dated 12-10-2013" received 12.17.2013 through Delaware Riverkeeper Network OPRA request) require immediate attention. Those who are drinking water delivered through the Paulsboro water system are unaware of the

presence of this dangerous chemical in their drinking water. This lack of public information should be immediately rectified by NJDEP. We also request that the Work Plan and all comments be made public.

We understand it is the responsibility of NJDEP to advise and guide Paulsboro and its residents and we urge swift action to protect public health. Obviously interim treatment measures or the provision of replacement water are urgently critical to eliminate PFCs, including PFNA, from the Paulsboro community's drinking water now. Relevant to this Work Plan, Solvay must revise its objectives as we have advised herein so that it will provide the necessary information for permanent resolution of the drinking water contamination in Paulsboro, at other locations identified in the Demicco report (including West Deptford), and to all water supplies that may have been polluted by PFCs from the Solvay facility and operations.

New Jersey led the way nationally several years ago by identifying PFCs as a water quality problem in the state. NJDEP has been working to establish a safe drinking water level for PFOA for several years. DRN has been involved with this issue since the beginning, having performed tap water sampling in Salem County communities which DRN submitted to NJDEP in 2006. NJDEP issued an Occurrence Study for PFOA in New Jersey public drinking water in 2007 and established a PFOA drinking water guidance level of 0.04 ppb based on lifetime health effects. However, progress towards establishing a safe drinking water limit that would require treatment to remove PFCs from the state's drinking water supplies was halted when the Drinking Water Quality Institute (DWQI) held its last public meeting in September 2010.

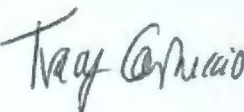
Several scientific studies on the sources, occurrence, distribution, properties, and health effects of PFCs were available to the DWQI and NJDEP to help inform their analytical process. Many have been published since that time and more continue to be issued by the health and scientific community, including specific information regarding PFNA. In short, the longer carbon chain lengths that characterize PFNA (C9) and other long carbon chain PFCs such as C-11 and C-13 make these PFCs more durable and persistent in the environment. These compounds do not degrade so it is reasonable to conclude that what was released to the groundwater during manufacturing or delivered onto soil or surface water is still present in some media and still poses a substantial human health and environmental risk. This is especially concerning because the scientific literature explains that the PFNA is more toxic at lower doses than shorter carbon chain PFCs.

Delaware Riverkeeper Network concludes that the Work Plan is not adequate, will not provide useful information towards a goal of understanding PFC distribution, fate, and exposures as explained in detail in the Demicco Report. The deficiencies need to be remedied or the results cannot be expected to be reliable. We urge NJDEP to move ahead with its own program of sampling, guidance to water systems and well water owners, regulation and treatment. A revamped Work Plan from Solvay that is based on a goal of understanding and acting to eliminate PFCs from the environment and water should be utilized in this effort. Thank you for the opportunity to submit comments on the Work Plan.

Sincerely,



Maya van Rossum
The Delaware Riverkeeper



Tracy Carluccio
Deputy Director



Ground Water Associates, LLC

Ground Water Resource Expertise

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December 19, 2013

Ms. Tracy Carluccio
Deputy Director
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**RE: Perfluorinated Compounds Work Plan Review
Solvay Specialty Polymers USA, LLC
West Deptford, New Jersey Plant**

Dear Ms. Carluccio:

Ground Water Associates, LLC has reviewed the Solvay Specialty Polymers USA (Solvay) Perfluorinated Compound Work Plan (Work Plan) prepared by Integral Consulting, Inc. dated November 15, 2013. Perfluorinated compounds (PFC), including notably perfluorononanoic acid (PFNA, a nine carbon chain PFC) and related compounds, have been detected in the Delaware River watershed. Solvay and preceding companies have used PFC, including PFNA, in manufacturing at the facility. The Solvay Work Plan is described as a voluntary program for investigation of PFC releases from the facility.

Work Plan Content

The Work Plan developed for Solvay has four specific media that are being investigated. The sampling plan includes the following:

- Sampling public water supply wells
- Sampling selected on-site monitoring wells at the facility
- Sampling surface water and sediment in the Delaware River
- Developing an air dispersion and deposition model

The objective of the Work Plan is simply stated as evaluating the presence of PFCs in the environmental media to be sampled. Specifically the following statement appears in Section 2.1 Objectives:

Solvay is committed to expediting the field sampling events, data validation, and reporting of results to better understand PFC related facts and circumstances as quickly as possible.

In the section on Data Quality Objectives (DQO) additional statements on objectives are presented as summarized in the Work Plan Table 3. The four sampling media presented above are reiterated. The sampling results will be analyzed for "precision, accuracy completeness, sensitivity



representativeness and comparability (PACSRC)". The Table 3 "Develop a Decision Rule" includes the following statement:

If the PACSRC results are satisfactory and the sampling results provide sufficient characterization to meet the project objectives in Section 2.1 (Objectives), no additional work will be performed in this investigation

In summary, my opinion is that the Work Plan is missing key environmental media that should be investigated. An additional soil and water sampling event will be required after the air dispersion and deposition model is completed. This sampling must include not only soils, but agricultural, domestic, small private, and public non-community water supply wells within the radius of deposition and beyond if detections of PFC's continue. The stated objective of the Work Plan is extremely limiting focusing on analytical accuracy not environmental distribution of the PFC's. A more comprehensive statement to the effect that the objectives are to understand the distribution of PFC's released from the facility and how that distribution will change over time for the assessment of potential environmental exposure, would appear to be more appropriate.

Dispersion of PFC in the Environment

The distribution of PFC in the environment has been detailed in other site investigations for PFCs, most notably in the E. I. DuPont facility in West Virginia. A variety of exposure scenarios have been detailed in those studies (see reference list). The distribution of PFC's in the environment have more potential pathways than the four primary environmental media presented in the Solvay Work Plan.

PFC's have unique properties that allow for wide spread migration in the environment. Primarily, the compounds are extremely stable, are water soluble and have only moderate sorption properties. These properties allow the migration of the chemical through surface soils and into the ground water.

The November 15, 2013 letter from Roux Associates, Inc. presented a spreadsheet of the PFC usage and emissions (attached). The usage and emissions include the following categories: air, water, landfill, products and destroyed.

Air

The Work Plan addresses the air emissions in the proposed air dispersion and deposition model. The extent of the model is stated as "receptors with 500-m spacing between 3 and 5 km of the fence line". The Work Plan does not state that any on-site and off-site soil samples will be obtained to validate the deposition results of the model. The deposition of PFC compounds on the soil becomes a PFC source to other environmental media. Specifically, the deposited PFC are now able to enter into the soil and then ground water. In addition, storm water runoff will also move PFC into streams and rivers. To develop future ground water concentrations in the aquifer, and subsequently future potential exposure from water supply wells, sufficient soil and ground water samples are needed. A single snap shot of current PFC concentrations, particularly in the public supply wells, does not predict future concentration trends, higher or lower.

The total distance of dispersion model appears to be the order of 3 to 5 km. The extent of this model can only be determined to be adequate following sampling verification; verification which is not presented or discussed in the Work Plan. It should be noted that EPA UCMR 3 sampling



included a result for Monroe Township MUA Wells that included a detection of PFNA (attached). This well(s) is at the eastern end of Gloucester County approximately 16 miles southeast of Solvay, a predominant downwind direction. The potential source or sources of PFNA in this well should be included in the Work Plan.

Water

Water emission is believed to represent waste water discharge to the Gloucester County Utility Authority (GCUA) at 2 Paradise Road just to the south of Solvay. The RCRA Corrective Action Environmental Indicator (EI) RCRIS code (CA725) report for Ausimont, USA Inc. (undated) indicates that inorganic and organic waste streams were pre-treated at the facility prior to discharge to GCUA. It is not known if sludge or other materials derived from this process were collected at the site or disposed of off-site. The nature of the on-site treatment and potential waste streams from this operation should be addressed in the Work Plan. In addition, river samples, SS1015, SS1016 and SS1017 are presented as outfall samples. It is believed that these samples represent the GCUA outfall, although that is not explicitly stated in the Work Plan.

Based on the data included in the spreadsheet, the waste water discharge was the largest emission or utilization of PFC's on the site. The resistance of PFC to degradation will result in the movement of these compounds into the waste streams from the GCUA, which are predominately treated water and sludge. The treated waste water is discharged into the Delaware River system carrying PFC's into the surface water system. The disposition of the sludge, however, was not addressed in the Work Plan. The sludge from the GCUA needs to be considered as an environmental source for further distribution of PFC's into the environment. If the sludge was used for soil amendment, then a new source of PFC to the soil and subsequently the ground water will result. If the sludge was deposited into a landfill, then the potential distribution into the environment now resides in landfill leachate. The disposition of the sludge from the GCUA needs to be evaluated as part of the potential environmental exposure.

The distribution of waste water into the Delaware River system is part of the environmental distribution of PFC. However, once the PFC enters the Delaware River the chemical will remain in the river water or partition into river sediments. However, it should be noted that the Potomac-Raritan-Magothy (PRM) aquifer subcrops below the river. In parts of the aquifer system, water from the Delaware River infiltrates into the aquifer due to depressed head levels from Critical Area 2. Therefore, the PRM aquifer has at least two potential sources for the PFC, the air deposited material that was picked up by infiltrating rainwater and induced infiltration from the Delaware River. If sludge containing PFC was used in the outcrop area of the PRM aquifer, a third potential source of material to the aquifer exists. Over time, these concentrations will change and therefore, exposures change.

Landfill

The Solvay spreadsheet includes emission of PFC's from the site to a landfill. The landfill or landfills that received this material are not discussed in the Work Plan. Yet the landfill(s) become a repository of PFC as illustrated by the spreadsheet. The landfill leachate will potentially pick up the PFC material in the landfill. If the landfill is not secure, the leachate could then enter the ground water environment. If leachate is treated at the landfill, the PFC could again move into a different



medium based on the method of leachate treatment. Tracking of the PFC sent to the landfill(s) should be included as part of the Work Plan to evaluate their distribution and fate.

Products

The amount of material removed as product is illustrated on the spreadsheet. Basically, product is on the order of only 11 percent of the material used in the manufacturing process.

Destroyed

Only a limited amount of material was destroyed by an on-site incinerator. The use of the incinerator on-site is not clear from documents available. The RCRA Corrective Action Environmental Indicator (EI) RCRIS code (CA725) report for Ausimont, USA Inc. (undated) states that none of the waste streams are listed as hazardous waste, but are classified due to their reactivity, toxicity, and ignitability. If the incinerator is a potential air release source, then it should be incorporated into the air dispersion and deposition model.

Additional Issues

EPA Region 2 has published a short summary of the Solvay Specialty Polymers USA, LLC NJ RCRA Cleanup Fact Sheet dated May 2013. The RPA summary reviews remediation history and states that from 1990 to 1992, soil contamination was cleaned up via excavation and off-site disposal. Some of the soil clean up areas are further documented in the RCRA Corrective Action Environmental Indicator (EI) RCRIS code (CA725) report for Ausimont, USA Inc. (undated).

The Work Plan for the site does not address the disposition of these materials. Are they a potential source of PFC's in the locations where disposal occurred? PFC's most likely were not analyzed in samples needed for disposal classification. Follow up questions on the possibility that landfilled material may contain PFC's and how secure the disposal sites are from environmental release should be documented as part of the Work Plan.

Dredge material has been removed from the Delaware River and deposited on the northern part of the property. The EPA document (May 2013) reported that the dredge material was capped in 2004. The age of the dredge spoils and possible concentrations of PFC's were not available. However, the Work Plan should address this material for PFC concentration. If the material was dredged in the manufacturing period of the facility, it is a potential PFC source. If the dredge material remains a possible release source then it should be addressed in the Work Plan. The dredge material needs to be evaluated as a source to the shallow ground water both pre and post cap. If releases occur to the shallow ground water within or beneath the dredge material further PFC migration either to river discharge and infiltration into the PRM Aquifer may have or is occurring.

Another potential on-site source that is not fully addressed in the Work Plan is runoff from the manufacturing facility area. On-site soils are not being sampled in the existing Work Plan until, possibly, after the completion of the air dispersion and deposition model. The RCRA Corrective Action Environmental Indicator (EI) RCRIS code (CA725) report for Ausimont, USA Inc. (undated) includes descriptions of potential sources of spills and soil remediation areas that could produce contaminated runoff. It should be noted that the soil remediation conducted in these areas



of the site typically would not have been testing for PFC at that time. These data gaps in soil concentration and runoff potential should be addressed with the results of the air dispersion and deposition model.

Presented Work Plan

The presented Work Plan included four items listed above.

Municipal Well Sampling

The first part of the Work Plan is the sampling of Municipal Public Supply wells, which appears to be on going during this review period for the Work Plan. The sampling of Public Supply wells is not as straight forward as just grabbing water from the wells at a random time. The pattern of antecedent pumping of the wells will affect the source of water to the wells and therefore, the distribution of PFC concentration. The operational pattern of pumping differs from summer to winter. In winter, wells will be shut off for extended periods. With the addition of New Jersey American Tri-County water coming into this area, wells are shut down for even longer periods that just a few years ago. A plan of sampling should be developed for each Municipality based on the operational history of the well fields. At least one sampling event should be conducted at peak production rates and at seasonal low production rates in each well. The Table 1 (PFC concentrations from samples collected Oct 30, 2013 at the West Deptford MUA) sampling results could easily be affected by seasonal variations in pumping and a finished water sample should have been obtained for Well 3. In each sampling event, samples should be obtained from all wells, after purging, even if the wells have been idle for a substantial length of time including raw and finished water.

Additional New Jersey public supply wells were identified in Post, et al. (2013) that detected PFNA levels near and downriver from Solvay along with PFOA and other PFC's. Site 5 of their report, Paulsboro Water Department, presented a PFNA concentration at 96 ng/l with PFOA at 26 ng/l. Table 2 from the Solvay Work Plan (attached) has values as high as 150 ng/l in finished water.

Two sites downriver, PWS-A and PWS-B, also had detections of PFNA with a detection of 72 ng/l PFNA in PWS-B along with other PFC compounds (see Post, et al. Figure 4 and Table S4, Supporting Information). The source or sources of the down river detections of PFC compounds should be included within the Work Plan. Water supply wells between these wells and Solvay including agricultural, domestic and small public supplies should be tested. Also, the Monroe Township MUA well sample discussed above should be included within the Work Plan although the environmental mechanism for the PFC source will probably be different than the wells near the Delaware River.

Sampling of On-site Monitoring Wells

Sampling of on-site wells is certainly critical data to be obtained. The sampling may identify zones of greatest release from on-site operation and, with ground water elevation data, begin to develop migration pathways. The wells were installed for tracking chlorinated organic compounds which have different partitioning coefficients than PFC. However, the spill sources may be the same. The Work Plan should identify if sources that created the organic contamination would also have had PFC compounds.



Soil sampling on-site, for both the distribution of PFC from potential spills and from air distribution/air deposition are not proposed in the Work Plan. Soil samples are needed to evaluate if further release from soils is or is not a potential long term PFC source.

A ground water treatment system has been installed at the site. The collection of ground water at the site has probably affected on-site distribution of PFC compounds. A single snapshot in time, where historical gradients have been disrupted by ground water pumping will not be able to identify the migration pathways and potential exposures issues as compounds move off-site. With the distances between the site and the Public Supply wells, the relationship between site concentrations and impacts to the public supply wells from on-site contamination may be difficult to link up. In addition, the Public Supply wells may be impacted by air deposited material that infiltrated to ground water, or ground water induced from the Delaware River. Even PFC from sludge could be a source to the wells if it were used locally.

The complexities of the site with potential sources to the public wells from on-site sources, off-site air deposition, infiltration from the river, or other sources (possible land application) makes for a very complex problem to understand the distribution of the PFC's from the site. Sampling from domestic wells, public non community and transient wells, farm irrigation wells or even other contaminated site monitoring wells away from the site will probably be required to fill in data gaps between on-site ground water results and results from the Public Supply wells. Off-site ground water quality data collection was not included in the Work Plan.

There are multiple complexities within the PRM aquifer in the region, including multiple aquifer zones, multiple confining zones, the induced infiltration from the Delaware River, and shifting Public Supply well production. At a minimum, a ground water flow and transport model may be required to understand the PFC distribution once the first sets of data has been collected.

Sampling surface water and sediment in the Delaware River

Sampling of water and sediment is potentially the most complex operation in the proposed Work Plan. The Work Plan states Solvey will be reoccupying locations previously sampled by DRBC. Other sampling locations selected are additional locations in the Delaware River, two locations at local creeks and confluence of the Delaware River, and one location at a nearby publicly owned treatment works (POTW) outfall which is assumed to be the GCUA outfall that treated wastewater from the site.

The river system is highly dynamic and sediment shifts constantly. Areas of deposition and erosion exist in relatively close proximity. The age of the sediments and mixing of sediments will be difficult to ascertain during sampling. The Work Plan presents detail on lithologic descriptions to be developed in the section entitled Subsurface Sediment Core Collection Using a Vibracorer. However, the analytical samples will be obtained as straight 6-inch intervals apparently without regard to depositional environments and stratigraphic layering in the cores. Some attempt of age dating of the material would enhance the value of the data collected. The field sampling team should have some discretion on restricting the sampling to single representative sediment layers and not homogenizing multiple layers into a single sample. A more rigorous sampling protocol including age analysis of the sediment is required.



A sampling and core-hole location was proposed at the confluence of the Delaware River and Little Mantua Creek, SS1018 and SS1019. Little Mantua Creek flows along the southern boundary of the Solvay facility. Sediment within Little Mantua Creek would have received surface runoff from the site and received runoff from any potential spills that historically may have occurred at the site. The selected location at the confluence of the creek and the Delaware River would have diluted the concentration in the Little Mantua Creek. Sediment and core sampling should be included in the Little Mantua Creek just downstream from the main industrial manufacturing area.

In addition, dredge spoil piles that postdate the start of PFC manufacturing are a source of these compounds. Dredged spoil piles from the river can be dated by historical records and samples obtained from the post-PFC time period. These spoil piles can provide snap shots in time of PFC distribution. The Work Plan should include sampling from a select few post-PFC manufacturing spoil piles to demonstrate if a source of these compounds exists. These spoil piles are potential sources of PFC that could release back into the environment, both ground water and surface water. Therefore, the river system sampling program should include an inventory of dredge spoil with sampling to identify PFC distribution within the spoils.

Air Dispersion and Deposition Model

The Work Plan presents a proposal to conduct air dispersion and deposition model. As stated above, what is missing is a plan to quantify and verify the results of the model with on-site and off-site soil sampling. Without the sampling verification on deposition, the model will provide little useful data on the distribution of PFC from the site via air distribution.

The occurrence of PFNA at the Monroe Township MUA well, which is 16 miles to the south and east should be addressed in the Work Plan. The Monroe wells are believed to be in a different aquifer, the water table Cohansey aquifer, with no known link to the water and aquifer system at the Solvay facility. PFNA at Monroe Township will require evaluation of air dispersion as a potential source (included within the plan) and verification that GCUA sludge was not used in the area (not included within the plan). Knowing the potential distribution of sludge may result in understanding the source of PFNA at this location remote to Solvay.

In summary, the potential distribution of PFC's from the Solvay facility has been shown to have greater complexities than addressed in the existing sampling Work Plan for this facility. Several additional media for sampling have been identified within this report. Most notable, is the lack of any sampling to verify the air dispersion and deposition model. This sampling would include both soil and multiple types of wells from agricultural, domestic, non-community public and even monitoring wells from other contaminated sites. This sampling is critical to understanding the distribution of PFC's in the PRM aquifer and the Public Supply wells. The second critical item is the disposition of sludge from the GCUA and where this material may have gone. Other items include the distribution of PFC in historical spoils removed from the Delaware River, and the reintroduction of PFC into the river from sediments and other historical repositories of PFC. These items need to be added to the Work Plan to understand PFC distribution, fate, and ultimately exposures.



If you have any questions on this report, please do not hesitate to contact me. We thank you for the opportunity to be of service.

Sincerely,
Ground Water Associates, LLC

Peter M. Demicco, PG
Hydrogeologist

Enclosures:



References and Background Sources:

Bilott, R. A., 2013, Letter RE: EPA Docket ID Number OPPT-2004-0113, MOU between USEPA and E. I. DuPont de Nemours, MOU Phase III – Future Work Plan Data Assessment Report, POFA Site-Related Environmental Assessment Program: Taft, Stettinius & Hollister, LLP, Walnut Street, Suite 1800, Cincinnati, Ohio, 12 pages with Attachments.

Davis, K. L., Aucoin, M. D., Larsen, B. S., Kaiser, M. A., and Hartten, A. S., 2007, Transport of ammonium perfluorooctanoate in environmental media near a fluoropolymer manufacturing facility: *ScienceDirect Chemosphere* 67 (2007), p 2011 – 2019.

Emmett, E. A., Shofer, F.S., Zhang, Hong, Freeman, David, Desai, Chintan, and Shaw, L. M., 2006, Community exposure to perfluorooctanoate; relationships between serum concentrations and exposure sources: *J. Occup. Environmental Medicine*, August, 48(8) 759 – 770. doi:10.1097/01.jom.0000232486.07658.74.

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Attachments

West Deptford Plant PFC Usage and Emissions

Year ^a	Surflon Used ^b (kg)	Surflon Emissions ^c (kg)					NaPFO Used (kg)	NaPFO Emissions ^c (kg)			
		Air ^d	Water ^d	Landfill ^e	Products ^d	Destroyed ^f		Air ^d	Water ^d	Landfill ^e	Products ^f
1991	4,375	1,171	2,624	88	493	0	0	0	0	0	0
1992	3,714	994	2,227	74	418	0	0	0	0	0	0
1993	3,292	881	1,974	66	371	0	0	0	0	0	0
1994	3,940	1,054	2,363	79	444	0	0	0	0	0	0
1995	5,228	1,399	3,135	105	589	0	0	0	0	0	0
1996	5,832	1,561	3,498	117	657	0	429	34	382	9	4
1997	9,098	2,435	5,456	182	1,025	0	1,773	142	1,578	35	18
1998	7,952	2,128	4,769	159	896	0	525	42	467	11	5
1999	6,683	1,788	4,008	134	753	0	2,169	174	1,930	43	22
2000	7,100	1,900	4,258	142	800	0	2,747	220	2,445	55	27
2001	7,953	2,128	4,770	159	896	0	1,547	124	1,377	31	15
2002	7,549	2,020	4,527	151	851	0	878	70	781	18	9
2003	8,226	2,201	4,933	165	927	0	496	40	441	10	5
2004	8,659	2,317	5,193	173	976	0	0	0	0	0	0
2005	5,946	1,859	4,166	139	783	0	0	0	0	0	0
2006	7,081	1,895	4,247	142	798	0	0	0	0	0	0
2007	8,487	2,266	5,078	169	954	0	0	0	0	0	0
2008	6,341	1,697	3,803	127	714	0	0	0	0	0	0
2009	6,462	1,729	3,596	130	727	280	0	0	0	0	0
2010	171	46	106	3	16	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	0	0	0	0

Notes:

NaPFO = sodium perfluorooctanoate

^a Data prior to 1991 during Penwalt/A to Chem ownership are not available in Solvay Specialty Polymers records.^b Usage data are estimated from production and accounting records.^c Emissions data are estimated using engineering calculations.^d Estimated from analyses of process samples and mass balance equations.^e Estimated based on historical patterns of solid waste generation rather than analysis of samples.^f Estimated from quantity of liquid waste collected for incineration.



ENVIRONMENTAL CONSULTING & MANAGEMENT

ROUX ASSOCIATES INC

402 Heron Drive
Logan Township, New Jersey 08085 TEL 856-423-8800 FAX 856-241-4670

November 15, 2013

Erica Bergman
NJDEP - Bureau of Case Management
401 E. State Street - Mail Code 401-05
P.O. Box 420
Trenton, NJ 08625-0420

Re: Perfluorocarbon Compound Usage
Solvay West Deptford Plant
10 Leonard Lane
West Deptford, New Jersey 08096

Dear Ms. Bergman:

As the Licensed Site Remediation Professional (LSRP) retained by Solvay Specialty Polymers, I have reviewed the attached Perfluorocarbon Usage spreadsheet (Spreadsheet) for the Solvay West Deptford Plant and I am submitting it on behalf of Solvay Specialty Polymers. Enclosed are three copies of the Spreadsheet for your internal distribution. Please feel free to contact Mitch Gertz with any questions.

Sincerely,

Thomas R. Buggey, LSRP #580659
Principal Hydrogeologist

Cc: Mitch Gertz – Solvay
Phil Goodrum – Integral
Nidal Azzam – USEPA (via email)

Table 2. Concentrations of PFCs Measured in Wells at Paulsboro Water Authority in September 2013

Analyte	Formula	CAS Number	Concentration ^a (µg/L)					
			Well #7 ^b		Well #8 ^b		Well #9 ^b	
			Raw	Finished	Raw	Finished ^c	Raw	Finished ^c
Perfluoroheptanoic acid (PFHpA; C7)	C ₆ F ₁₃ COOH	375-85-9	0.0038	0.0040	0.0037	0.0040	0.0035	0.0040
Perfluorohexanesulfonic acid (PFHxS; C6)	C ₆ F ₁₃ SO ₃ H	355-46-4	0.0044	0.0047	0.0059	0.0061	0.0035	0.0061
Perfluorohexanoic acid (PFHxA; C6)	C ₅ F ₁₁ COOH	307-24-4	0.0049	0.0050	0.0068	0.0064	0.0085	0.0064
Perfluorononanoic acid (PFNA; C9)	C ₈ F ₁₇ COOH	375-95-1	0.14	0.15	0.015	0.016	0.0098	0.016
Perfluorooctanesulfonic acid (PFOS; C8)	C ₈ F ₁₇ SO ₃ H	1763-23-1	0.0060	0.0074	0.0084	0.0090	0.0040	0.0090
Perfluorooctanoic acid (PFOA; C8)	C ₇ F ₁₅ COOH	335-67-1	0.032	0.035	0.019	0.018	0.053	0.018

Notes:

CAS = Chemical Abstracts Service registry number

^a Source file: Adobe Acrobat electronic copy of Eurofins Eaton Analytical - Laboratory Report for QC Laboratories. Samples Received September 18, 2013. Sample Group: Paulsboro PFC. Folder #449989. Analytical Protocol: USEPA Method #537.^b Sample Numbers (Raw, Finished): Well #7: 20130910296, 201309190304; Well #8: 201309190305, 201309190307; Well #9: 201309190306, 201309190307.^c Results for finished water for Well #8 and Well #9 are reported as a single result (i.e., "#8 + #9 WTP").




Region 2

You are here: [EPA Home](#) > [Region 2 Waste](#) > [NJ RCRA Cleanup Fact Sheet](#) > Solvay Solexis Incorporated

<http://www.epa.gov/region02/waste/fsausimo.htm>
Last updated on 6/13/2013

Solvay Specialty Polymers USA LLC

Other (Former) Names of Site - Solvay Solexis, Inc., Ausimont USA Incorporated, National Steel Company (Pennwalt)

EPA Identification Number:	NJD980753875
Facility Location:	10 Leonard Lane, Thorofare, New Jersey 08086 
Facility Contact:	Facility Contact: Mitch Gertz: (856) 251-6630
EPA Contact:	Andy Park, 212-637-4184, park.andy@epa.gov
New Jersey Department of Environmental Protection (NJDEP) Case Manager:	Loren Lasky, Loren.Lasky@dep.state.nj.us
Last Updated:	May 2013
Environmental Indicator Status:	Human Exposures Under Control [PDF 771.40 KB, 40 pp] has been verified. Groundwater Contamination Under Control: No status has been reported.

Site Description

The site is located at 10 Leonard Lane, in West Deptford Township, New Jersey, in a mostly industrial setting surrounded by a rural residential area. Pennwalt began operations in the 1970s manufacturing fluorocarbons but the operations ceased in 1977. New operations began in 1985, manufacturing vinylidene fluoride monomers, fluoropolymers and fluorocarbons. The site was sold to Elf Atochem in 1989, subsequently to Ausimont USA, Inc. in 1990, and then to the Solvay Group in 2002. Currently, fluoropolymers, fluorocarbons and fluoroelastomers are manufactured. The operation generates hazardous wastes that are managed under a permit from New Jersey Department of Environmental Protection (NJDEP) for on-site hazardous waste storage and incineration.

Potential Threats and Contaminants

Groundwater and soil contamination at the site resulted from plant operations and management of wastes. Key groundwater contaminants include 111, trichloroethane (and its degradation products, 1,1 dichloroethane, 1,1 dichloroethene), and carbon tetrachloride and its degradation product, chloroform. Metals in groundwater include iron, manganese and aluminum. Soils contamination is below NJDEP direct contact standards for volatile organic compounds. Metals in soil include antimony and nickel.

Cleanup Approach and Progress

From 1990 to 1992, soil contamination was cleaned up via excavation and offsite disposal at a waste disposal facility, followed by backfilling of the excavated areas with clean soil.

In 2004, Solvay installed a soil cap at the dredge spoils area on the site's northern section, which is located outside the manufacturing area. In 2005, Solvay replaced underground process piping with double walled piping to prevent leaks. In April of 2010, Solvay began operation of a groundwater pump and treat system to provide onsite treatment and hydraulic containment of the plume. The treated groundwater is reused in the manufacturing process.

Solvay Specialty Polymers USA LLC is currently investigating the groundwater contamination at the site to determine how far it may extend. The investigation needs to be completed to define the hydrogeology and groundwater contamination and is primarily focused off-site. An appropriate final remedy will be selected based on the contaminant concentration levels, the rate at which the contaminated groundwater is moving and the distance the plume of contaminated water has migrated. Institutional controls (e.g., a Deed Notice for residual soil contamination and a Classification Exception Area for any remaining groundwater contamination) will be imposed at areas with residual contamination. A long-term groundwater monitoring system will be developed to ensure that the groundwater contamination continues to be contained.

Final Cleanup Status or Projection

- [Final Remedy Construction](#) (RCRAInfo database code CA550) has not been achieved.

Site Repository

Copies of supporting technical documents and correspondence cited in the site fact sheet are available for public review at the following location:

New Jersey Department of Environmental Protection
Division of Solid & Hazardous Waste
Records Center

<http://www.era.gov/region02/waste/fsausimo.htm>

12/15/2013

PWSID	PWSName	Size	FacilityID	FacilityName	FacilityWaterType	SamplePointID	SamplePointName	SamplePointType	AssociatedFacilityID	Region
AssociatedSamplePointID	CollectionDate	SampleID	Contaminant	MRL	MethodID	AnalyticalResultsSign	AnalyticalResultValue	SampleEventCode	MonitoringRequirement	
CA3310009	Eastern Municipal Water District XL	91806	Well 59 (Indian Ave.) GW		3310009806	EP #82: Well 59 Treated	EP	99002	3310009998	6/18/2013 B3F1941-01
PFHpA	0.01 EPA 537 = 0.0220	SE1	AM 09 CA							
NJ1604001	Hawthorne Water Department L	06007	N. Station Goffle Field GW		TP006007	EPTDS from N. Station Goffle Field	EP	14512	DBP MAX	5/22/2013 201305230216AM
PFOA	0.02 EPA 537 = 0.0220	SE1	AM 02 NJ							
NC0363108	Moore County Public Utilities - Pinehurst L	40088	EMWD Intertie		SW	EP003	EPTDS from EMWD Water	EP	5S195	MR003 5/16/2013 201305170365AM
PFOA	0.02 EPA 537 = 0.0230	SE2	AM 04 NC							
NJ1604001	Hawthorne Water Department L	07016	S. Station Tower 1 GW		TP007016	Wagaraw Wellfield	EP	14512	DBP MAX	5/22/2013 201305230209AM
537	= 0.0230 SE1 AM	02	NJ							PFOA 0.02 EPA
NJ1604001	Hawthorne Water Department L	10029	Utter Ave. Treatment GW		TP010029	EPTDS from Utter Ave. Treatment	EP	14512	DBP MAX	5/22/2013 201305230221AM
PFOA	0.02 EPA 537 = 0.0230	SE1	AM 02 NJ							
✓ NJ0811002	Monroe Township MUA L	05014	Wells 8 & 14 TP GW		TP005014	Rt. 42 Black Horse Pike	EP	15366	DBP MAX	6/26/2013 728296-9243
PFNA	0.02 EPA 537 = 0.023980	SE1	AM 02 NJ							
CA3010037	Yorba Linda Water District VL	91805	Highland Reservoir GW		3010037805	EP #12: RES-YLWDHIGHLAND-01	EP	99002	3010037992	1/9/2013 3010037805
PFOA	0.02 EPA 537 = 0.0241	SE1	AM 09 CA							
CA3910015	City of Lathrop L	91801	Well 21 GW			EP #14: Well 21 Treated	EP	99995	3910015995	4/17/2013 A3C1742-01A
0.02	EPA 537 = 0.0250	SE1	AM 09 CA							PFOA
NJ0217001	Fair Lawn Water Department L	10027	Dorothy St. TP GW		TP010027	EPTDS from Dorothy St. TP	EP	14794	DBP MAX	5/28/2013 721812-8985
0.02	EPA 537 = 0.0253	SE1	AM 02 NJ							PFOA
NJ0217001	Fair Lawn Water Department L	05020	Well 28 TP GW		TP005020	Treatment House - Well 28	EP	14794	DBP MAX	1/29/2013 703130-8017
537	= 0.026840 SE1 AM	02	NJ							PFOA 0.02 EPA
AL0000588	Rainbow City Utilities Board L	07064	Gadsden Water Intertie		SW	EP001	EPTDS from Gadsden Water	EP	06014	MR001 4/15/2013 2810100
0.02	EPA 537 = 0.03	SE1	AM 04 AL							PFOA
AL0000591	Southside Waterworks L	08464	Gadsden Water Intertie		SW	EP001	EPTDS from Gadsden Water	EP	06017	MR001 1/21/2013 2769276
0.02	EPA 537 = 0.03	SE1	AM 04 AL							PFOA
CO0121275	City of Fountain L	00004	Chlorination for Well 4 GW		0004T	EPTDS from Chlorination for Well 4	EP	06679	MAXRES4	1/15/2013 2766004
0.02	EPA 537 = 0.03	SE1	AM 08 CO							PFOA
NJ0217001	Fair Lawn Water Department L	02012	Westmoreland TP GW		TP002012	EPTDS from Westmoreland TP	EP	14794	DBP MAX	7/30/2013 734212-9422
0.02	EPA 537 = 0.0304	SE2	AM 02 NJ							PFOA
NJ0217001	Fair Lawn Water Department L	02012	Westmoreland TP GW		TP002012	EPTDS from Westmoreland TP	EP	14794	DBP MAX	1/29/2013 703126-7999
0.02	EPA 537 = 0.036780 SE1	AM	02 NJ							PFOA

NY5110526 0.03	Suffolk County Water Authority EPA 537 =	XL SE1	00454 AM	Station Rd. LO Wellfield 02 NY	GW	00454EP	Station Rd. #1A	EP	01454	01454MR	3/7/2013	201604199	PFHxS
AL0000588 0.02	Rainbow City Utilities Board EPA 537 =	L SE2	07064 AM	Gadsden Water Intertie 04 AL	SW	EP001	EPTDS from Gadsden Water	EP	06014	MR001	7/22/2013	2864642	PFOA
AL0000591 0.02	Southside Waterworks EPA 537 =	L SE2	08464 AM	Gadsden Water Intertie 04 AL	SW	EP001	EPTDS from Gadsden Water	EP	06017	MR001	4/15/2013	2810419	PFOA
AL0000591 0.04	Southside Waterworks EPA 537 =	L SE2	08464 AM	Gadsden Water Intertie 04 AL	SW	EP001	EPTDS from Gadsden Water	EP	06017	MR001	4/15/2013	2810419	PFOS
CO0121275 0.02	City of Fountain EPA 537 =	L SE1	00001 AM	Chlorination for Well 1 08 CO	GW	0001T	EPTDS from Chlorination for Well 1	EP	06679	MAXRES1	1/15/2013	2765892	PFOA
CO0121275 0.04	City of Fountain EPA 537 =	L SE1	00001 AM	Chlorination for Well 1 08 CO	GW	0001T	EPTDS from Chlorination for Well 1	EP	06679	MAXRES1	1/15/2013	2765892	PFOS
CO0121275 0.02	City of Fountain EPA 537 =	L SE1	00002 AM	Chlorination for Well 2 08 CO	GW	0002T	EPTDS from Chlorination for Well 2	EP	06679	MAXRES2	1/15/2013	2765901	PFOA
CO0121275 0.04	City of Fountain EPA 537 =	L SE1	00002 AM	Chlorination for Well 2 08 CO	GW	0002T	EPTDS from Chlorination for Well 2	EP	06679	MAXRES2	1/15/2013	2765901	PFOS
CO0121275 0.03	City of Fountain EPA 537 =	L SE1	00003 AM	Chlorination for Well 3 08 CO	GW	0003T	EPTDS from Chlorination for Well 3	EP	06679	MAXRES3	1/15/2013	2766032	PFHxS
CO0121275 0.04	City of Fountain EPA 537 =	L SE1	00003 AM	Chlorination for Well 3 08 CO	GW	0003T	EPTDS from Chlorination for Well 3	EP	06679	MAXRES3	1/15/2013	2766032	PFOS
CO0121275 PFOA	City of Fountain EPA 537 =	L SE2	00005 AM	Fountain Valley Authority Intertie 08 CO	SW	00005	EPTDS from Fountain Valley Authority	EP	06679	MAXRES5	4/16/2013	2810052	
IL1130200 0.04	Bloomington SE1 AM	VL 05	90001 IL	Plant on South Side of Dam	SW	TP01	EPTDS from Plant	EP	99001	DBPMAx	3/6/2013	2789589	PFOA 0.02 EPA 537 =
TX2210001 0.041890	City of Abilene SE3 AM	XL 06	58563 TX	Northeast Plant	SW	EP002MC2Sample Site	EP	45540	DS012	8/20/2013	739083-9589	PFOS 0.04 EPA 537 =	
CA1910042 PFOS	City of Pico Rivera Water Department EPA 537 =	L SE1	91812 AM	Well 1 09 CA	GW	1910042812	EP #18: Well 1 Treated	EP	99001	1910042990	1/24/2013	440-36162-11	
NC0363108 PFHxS	Moore County Public Utilities - Pinehurst EPA 537 =	L SE1	00039 AM	Fire Station #1 04 NC	GW	E08	EPTDS from Fire Station #1	EP	99001	MR004	2/27/2013	201302280392AM	
MA1329000 0.0430	Westfield Water Department SE1 AM	L 01	00033 MA	Well #7	GW	10516	EPTDS from Well #7	EP	99002	MR004	2/27/2013	3584876005AM PFOA 0.02 EPA 537 =	

CA1910211	Park Water Company - Bellflower/Norwalk	VL	91803	Well 46C	GW	1910211803	EP #41: Well 46C Treated	EP	99002	1910211992	6/18/2013					
201306180128AM	PFOS	0.04	EPA 537	=	0.0450	SE1	AM	09	CA							
AL0000588	Rainbow City Utilities Board	L	07064	Gadsden Water Intertie	SW	EP001	EPTDS from Gadsden Water	EP	06014	MR001	4/15/2013	2810100	PFHpA			
0.01	EPA 537	=	0.01	SE1	AM	04	AL									
AL0000588	Rainbow City Utilities Board	L	07064	Gadsden Water Intertie	SW	EP001	EPTDS from Gadsden Water	EP	06014	MR001	7/22/2013	2864642	PFHpA			
0.01	EPA 537	=	0.01	SE2	AM	04	AL									
AL0000591	Southside Waterworks	L	08464	Gadsden Water Intertie	SW	EP001	EPTDS from Gadsden Water	EP	06017	MR001	1/21/2013	2769276	PFHpA			
0.01	EPA 537	=	0.01	SE1	AM	04	AL									
AL0000591	Southside Waterworks	L	08464	Gadsden Water Intertie	SW	EP001	EPTDS from Gadsden Water	EP	06017	MR001	4/15/2013	2810419	PFHpA			
0.01	EPA 537	=	0.01	SE2	AM	04	AL									
CO0121275	City of Fountain	L	00002	Chlorination for Well 2	GW	0002T	EPTDS from Chlorination for Well 2	EP	06679	MAXRES2	1/15/2013	2765901	PFHpA			
0.01	EPA 537	=	0.01	SE1	AM	08	CO									
CO0121275	City of Fountain	L	00004	Chlorination for Well 4	GW	0004T	EPTDS from Chlorination for Well 4	EP	06679	MAXRES4	1/15/2013	2766004	PFHpA			
0.01	EPA 537	=	0.01	SE1	AM	08	CO									
NC0326010	Fayetteville Public Works Commission	XL	00010	Hoffner WTP	SW	EP1	EPTDS from Hoffner WTP	EP	52930	U99001	1/17/2013	201301180382AM				
PFHpA	0.01	EPA 537	=	0.01	SE1	AM	04	NC								
MA1329000	Westfield Water Department	L	00033	Well #7	GW	10516	EPTDS from Well #7	EP	99002	MR004	2/27/2013	358487600SAM	PFHpA			
0.0110	SE1	AM	01	MA								0.01	EPA 537	=		
NJ1205001	Edison Water Co. c/o NJ American Water	L	10017	Middlesex Water Intertie	SW	CC010017	NJEMS 12-229 - Edison	EP	14357	DBPMAX	1/9/2013	20679401				
PFHpA	0.01	EPA 537	=	0.0110	SE1	AM	02	NJ								
NM3521613	Hobbs Municipal Water Supply	L	94046	Hydro	GW	5P216130461	Entry Point #5	EP	05535	MR005	8/12/2013	201308130173AM	PFHpA	0.01	EPA	
537	=	0.0120	SE2	AM	06	NM										
TX2210001	City of Abilene	XL	58563	Northeast Plant	SW	EP002MC2	Sample Site	EP	45540	DS012	5/20/2013	720300-8911	PFHpA	0.01	EPA 537	=
0.015140	SE2	AM	06	TX												
NC0363108	Moore County Public Utilities - Pinehurst	L	40088	EMWD Intertie	SW	EP003	EPTDS from EMWD Water	EP	55195	MR003	2/28/2013	201303010356AM				
PFHpA	0.01	EPA 537	=	0.0160	SE1	AM	04	NC								
TX2210001	City of Abilene	XL	58563	Northeast Plant	SW	EP002MC2	Sample Site	EP	45540	DS012	8/20/2013	739083-9589	PFHpA	0.01	EPA 537	=
0.0161	SE3	AM	06	TX												
CA1910042	City of Pico Rivera Water Department	L	91811	Well 11	GW	1910042811	EP #19 Well #11 Treated	EP	99001	1910042999	1/24/2013	440-36162-9				
PFOA	0.02	EPA 537	=	0.02	SE1	AM	09	CA								

CO0121275 0.01	City of Fountain EPA 537	L =	0.02	00001 SE1	Chlorination for Well 1 AM 08 CO	GW	0001T	EPTDS from Chlorination for Well 1	EP	06679	MAXRES1	1/15/2013	2765892	PFHpA
CO0121275 0.02	City of Fountain EPA 537	L =	0.02	00003 SE1	Chlorination for Well 3 AM 08 CO	GW	0003T	EPTDS from Chlorination for Well 3	EP	06679	MAXRES3	1/15/2013	2766032	PFOA
CO0121275 PFHpA	City of Fountain 0.01 EPA 537	L =	0.02	00005 SE2	Fountain Valley Authority Intertie AM 08 CO	SW	00005	EPTDS from Fountain Valley Authority	EP	06679	MAXRES5	4/16/2013	2810052	
KY0560258 537	Louisville Water Company =	XL 0.02	SE3	00001 AM 04	Crescent Hill Filter Plant KY	SW	TPA	Plant Tap EPTDS	EP	89961	K21	8/12/2013	2875568	PFOA 0.02 EPA
KY0560258 537	Louisville Water Company =	XL 0.02	SE1	00002 AM 04	BE Payne Water Treatment Plant KY	SW	TPB	Plant Tap EPTDS	EP	89962	370	2/11/2013	2777914	PFOA 0.02 EPA
NJ0217001 537	Fair Lawn Water Department =	L 0.020620	SE2	05020 AM 02	Well 28 TP GW NJ	TP005020	Treatment House - Well 28	EP	14794	DBP MAX	7/30/2013	734226-9422	PFOA 0.02 EPA	
CA1910042 PFOA	City of Pico Rivera Water Department 0.02 EPA 537	L =	0.0210	91810 SE1	Well 12 AM 09	GW CA	1910042810	EP #20: Well 12 Treated	EP	99001	1910042999	1/24/2013	440-36162-7	
NJ0217001 537	Fair Lawn Water Department =	L 0.0217	SE2	01005 AM 02	Cadmus TPGW NJ	TP001005	EPTDS from Cadmus TP	EP	14794	DBP MAX	7/30/2013	734230-9422	PFOA 0.02 EPA	
TX2210001 0.046160	City of Abilene SE2 AM	XL 06	58563 TX	Northeast Plant	SW	EP002MC2	Sample Site	EP	45540	DS012	5/20/2013	720300-8911	PFOS 0.04 EPA 537 =	
TX2210001 0.046860	City of Abilene SE3 AM	XL 06	58563 TX	Northeast Plant	SW	EP002MC2	Sample Site	EP	45540	DS012	8/20/2013	739083-9589	PFHxS 0.03 EPA 537 =	
CA3010037 PFOS	Yorba Linda Water District 0.04 EPA 537	VL =	0.0474	91805 SE1	Highland Reservoir AM 09	GW CA	3010037805	EP #12: RES-YLWDHIGHLAND-01	EP	99002	3010037992	1/9/2013	3010037805	
CA1910042 PFOS	City of Pico Rivera Water Department 0.04 EPA 537	L =	0.0480	91802 SE1	Well 8 AM 09	GW CA	1910042802	EP #28: Well 8 Treated	EP	99001	1910042992	1/24/2013	440-36162-1	
CA1910211 201306180126AM	Park Water Company - Bellflower/Norwalk PFOS 0.04 EPA 537	VL =	0.0490	91804 SE1	Well 41A AM 09	GW CA	1910211804	EP #40: Well 41A Treated	EP	99002	1910211993	6/18/2013		
AL0000591 0.04	Southside Waterworks EPA 537	L =	0.05	08464 SE1	Gadsden Water Intertie AM 04 AL	SW	EP001	EPTDS from Gadsden Water	EP	06017	MR001	1/21/2013	2769276	PFOS
MI0005370 0.05	Plainfield Township SE1 AM	L 05	05448 MI	Treatment Plant	GU	TP100	Treatment Plant Tap	EP	05004	MR1	6/28/2013	2850296	PFOS 0.04 EPA 537 =	
CA1910211 201305210287AM	Park Water Company - Bellflower/Norwalk PFOS 0.04 EPA 537	VL =	0.0510	91807 SE1	Well 28B AM 09	GW CA	1910211807	EP #37: Well 28B Treated	EP	99002	1910211995	5/21/2013		

CA1910211	Park Water Company - Bellflower/Norwalk	VL	91807	Well 28B	GW	1910211807	EP #37: Well 28B Treated	EP	99002	1910211995	6/18/2013	
201306180123AM	PFOS	0.04	EPA 537 =	0.0510	SE1	AM	09	CA				
TX2210001	City of Abilene	XL	58563	Northeast Plant	SW	EP002MC2Sample Site	EP	45540	DS012	5/20/2013 720300-8911	PFHxS	0.03 EPA 537 =
0.051650	SE2	AM	06	TX								
CA1910211	Park Water Company - Bellflower/Norwalk	VL	91803	Well 46C	GW	1910211803	EP #41: Well 46C Treated	EP	99002	1910211992	5/21/2013	
201305210279AM	PFOS	0.04	EPA 537 =	0.0520	SE1	AM	09	CA				
CA1910211	Park Water Company - Bellflower/Norwalk	VL	91804	Well 41A	GW	1910211804	EP #40: Well 41A Treated	EP	99002	1910211993	5/21/2013	
201305210285AM	PFOS	0.04	EPA 537 =	0.0520	SE1	AM	09	CA				
CA3310009	Eastern Municipal Water District	XL	91806	Well 59 (Indian Ave.)	GW	3310009806	EP #82: Well 59 Treated	EP	99002	3310009998	6/18/2013 B3F1941-01	
PFOA	0.02	EPA 537 =	0.0530	SE1	AM	09	CA					
NYS110526	Suffolk County Water Authority	XL	00107	Bellmore Ave. Wellfield	GW	00107EP	Bellmore Ave. #4	EP	01107	01107MR	4/26/2013 201616958	
PFNA	0.02	EPA 537 =	0.0530	SE1	AM	02	NY					
AZ0410112	City of Tucson	XL	13016	TEPDS126R004A	GW	TEPDS126R004A	R-004A	EP	13002	DSMRT0154/16/2013 201304180592AM	PFOS	0.04 EPA 537 =
0.0560	SE1	AM	09	AZ								

N

Abrines, David

From: Jean, Robert
Sent: Wednesday, December 18, 2013 10:29 AM
To: Bergman, Erica
Cc: Azzam, Nidal
Subject: Ref. Solvay Solexis Perfluorinated Compounds Work Plan Comments
Attachments: SolvaySolexisPFCWPlanCommentLet.doc

Erica,

Enclosed are EPA's comments associated with the PFCs' Work Plan submitted on November 15, 2013. Please click to retrieve.

Solvay Solexis/Solvay Specialty Polymers USA, LLC.,
10 Leonard Lane
West Deptford, New Jersey 08096
EPA ID Number: NJD980753875

Ref: Perfluorinated Compounds (PFCs) Work Plan

Dear Mrs. Erica Bergman:

The Environmental protection Agency (EPA) has reviewed the Perfluorinated Compounds (PFCs) Work Plan submitted on November 13, 2013 to investigate the PFCs contaminations in groundwater, surface water, surface soil, subsurface soil, and sediments on site and offsite.

Enclosed are the EPA's comments:

Surface Water Characterization

Comment (1): Based on past and present operation history at the site, fluorocarbons, vinylidene fluoride monomers, fluoropolymers, and fluoroelastomers; polyvinylidene fluoride resin were manufactured, and /or produced, and generated at the site. What methods are being used to fully characterize the nature, rate and extent (vertical/horizontal extent) of contaminant releases to the soil, subsurface soil, sediment, surface water and groundwater onsite and offsite?

The physical attributes of the potentially affected water body should be characterized to effectively develop a monitoring program and to interpret results. Depending on the characteristics of the release and the environmental setting, any or all of the following hydrologic measurements may be undertaken:

Surface Water Hydrology

- Overland flow (hydraulic measurement);
- Open Channel Flow (measurement of channel discharge at controls (e.g., dams and weirs); definition of flow pathways;
- Close conduit flow (measurement of discharge);
- Sampling of surface water (streams and Rivers), runoff, sediment, and Biota; and
- Sampling of Run off

Groundwater Characterization beneath the Site

Comment (2): To fully characterize the groundwater flow beneath the site and to determine the extent of groundwater contamination, Solvay should determine and assess the following:

- The direction(s) and rate of the groundwater (including both horizontal and vertical components of flow);
- Seasonal/temporal, natural, and artificially induced (e.g., offsite production well pumping home owner water supply wells) short-term and long-term variations and groundwater elevations and flow patterns; and
- The hydraulic conductivities of the stratigraphic units at the site, including vertical hydraulic conductivity of the confine layer (s).

Comment (3): Describe the alternative methods will Solvay utilize to determine sampling intervals that are consistent with the hydrogeologic setting on site an offsite.

In-Situ Hydraulic Conductivity and Testing:

Comment (4): Discuss what procedure will Solvay use to determine the variation in hydraulic conductivity in order to better understand the potential migration pathway of contamination in the subsurface.

Existing Monitoring Wells Investigation:

Comment (5): Monitoring wells sampling shall always progress from the well expected to be the least contaminated to the well expected to be the most contaminated, in order to minimize the potential for cross contamination of samples that may result from inadequate decontamination of sampling equipment. Assuming the same equipment is used to sample monitoring wells, describe the procedures that Solvay proposes to use to minimize the potential for cross contamination of samples.

Comment (6): Describe the purging procedures Solvay will use to insure that collected samples are representative of the formation being tested.

Analytical Method:

Comment (7): Specify which EPA's and/or NJDEP's analytical method will be used to analyzed groundwater, surface water, soil, subsurface soil and sediment sampling.

Please contact Jean Robert Jean if you have any question and/or comments at (212)637-4136.

File copy

12/30/13

COPY TO KAREN FELL
GARY BUCHANAN
MICHELE SIENKOWSKA
IN THE SOLVAY FILE



BRADLEY M. CAMPBELL LLC
COUNSELORS AT LAW

December 23, 2013

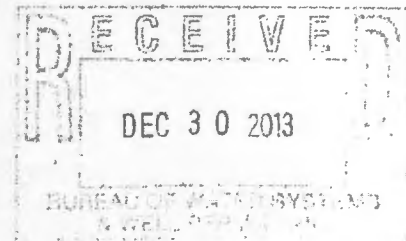
By Registered Mail, Return Receipt Requested

George Corbin
President
Solvay Specialty Polymers USA, LLC (and affiliates listed in Exhibit A)
333 Richmond Avenue
Houston, Texas 77098

James Harton
President
Rhodia, Inc.
8 Cedarbrook Drive
Cranbury, New Jersey 08512

Mitch Gertz
Solvay Specialty Polymers USA, LLC, et al.
10 Leonard Lane
Thorofare, New Jersey 08086

Corporation Service Co.
Registered Agent
Solvay Specialty Polymers USA, LLC, et al.
830 Bear Tavern Road
West Trenton, New Jersey 08628



Re: Notice of Intent to Sue under Section 7002(a)(1)(B) of the
Resource Conservation and Recovery Act, 42 U.S.C. § 6972(a)(1)(B):
Solvay Facility, 10 Leonard Lane, West Deptford, New Jersey

Dear Messrs. Corbin, Harton and Gertz:

This letter constitutes the Borough of Paulsboro's Notice of Intent to Sue Solvay Specialty Polymers USA, LLC, the affiliates listed in Exhibit A, Rhodia, Inc., and Mitch Gertz (collectively, Solvay) as owners and operators of the facility located at or about 10 Leonard Lane, Thorofare (West Deptford), New Jersey (the Facility), under section

INFO@BRADCAMPBELL.US

50 WEST STATE STREET / SUITE 1100 / TRENTON, NEW JERSEY 08608
MAIN 609 392 4500 / TELECOPIER 609 392 4511

1025 CONNECTICUT AVENUE, N.W. / SUITE 1000 / WASHINGTON D.C. 20036
MAIN 202 327 5405 / TELECOPIER 202 327 5406



7002(a)(1)(B) of the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. § 6972(a)(1)(B). Specifically, this letter gives notice of the Borough of Paulsboro's intent to seek abatement of an imminent and substantial endangerment to health and the environment resulting from Solvay's disposal of solid waste or hazardous waste at or from the Facility. Bradley M. Campbell, LLC, represents the Borough.

Solvay and/or its predecessor companies at the Facility have improperly disposed of solid waste or hazardous waste there for decades, and this waste includes perfluorochemical compounds (PFCs) such as perfluorononanoic acid (PFNA), perfluorooctanoic acid (PFOA), perfluorooctanesulfonic acid (PFOS), and other known or suspected toxic compounds, certain of which Solvay has patented. These toxic PFCs have entered the Borough of Paulsboro's groundwater, have migrated to the Borough's public and private residential drinking water supply wells, and permeate Mantua Creek and the Delaware River in and adjoining Paulsboro.

While there have been limited remedial activities at the Facility under the supervision of the New Jersey Department of Environmental Protection (NJDEP) since 1990, apparently under delegation from the United States Environmental Protection Agency, the delegation to NJDEP is facially unlawful (this is a RCRA facility, and New Jersey does not have an approved state hazardous waste program pursuant to 40 C.F.R. Part 272). Moreover, twenty-three years of direct NJDEP oversight failed to prevent ongoing PFC use and disposal at the Facility, failed to prevent or abate contamination migrating to the Borough's public and private drinking water sources, failed to prevent or abate ubiquitous contamination of Mantua Creek and the Delaware River, and failed to prevent ingestion and bioaccumulation of PFCs by the Paulsboro population, including sensitive subpopulations of infants and children. These failures, and more than two decades of leaving the Borough and its residents exposed to toxic hazards from Solvay's solid or hazardous waste, make clear there is no basis to believe that action by Solvay or NJDEP will result in abatement of the imminent and substantial endangerment resulting from the Facility's operations and waste handling, storage and disposal.

Section 7002(a)(1)(B) of RCRA, 42 U.S.C. § 6972(a)(1)(B), allows affected persons to bring suit:

against any person . . . including any past or present generator, past or present transporter, or past or present owner or operator of a treatment, storage, or disposal facility, who has contributed or is contributing to the past or present handling, storage, or disposal of any solid or hazardous waste which may present an imminent and substantial endangerment to health or the environment.

The Borough believes that hazardous or solid waste that Solvay generated and/or disposed of on public and private property has now migrated into regional drinking water resources, and river and creek sediment in Paulsboro, and presents an imminent and substantial endangerment to health and the environment. Nearly twenty-four years after



NJDEP assumed oversight, Solvay and the NJDEP have failed to take the actions necessary to abate this ongoing imminent and substantial endangerment.

The Borough will file suit in the United States District Court for the District of New Jersey, and will seek abatement of the imminent and substantial endangerment caused by the Facility. We anticipate that the federal court complaint may include claims under New Jersey's Environmental Rights Act (ERA), N.J.S. 2A:35A-1 *et seq.* and common law causes of action as well. We will ask the Court, *inter alia*, to order Solvay to commence immediately with testing and remediation of hazardous waste emanating from the Facility; to install, operate, maintain and pay for measures to ensure the safety of the Borough's public and private drinking water wells; to remove hazardous waste from Mantua Creek and portions of the Delaware River adjacent to Paulsboro that are a source of PFC exposure for the Borough's residents; and to have these actions overseen by a special master with power to enforce a schedule appropriate to the hazard presented.

If you have any questions about this letter or wish to discuss its contents with us, please contact me at the letterhead address and phone number. We request that if you wish to discuss this matter before the complaint is filed, you contact us as quickly as possible. We intend to file the complaint shortly after the expiration of the 90-day notice period provided by 42 U.S.C. § 6972(b)(2)(A) unless the Facility promptly enters an agreement with the Borough providing the relief to which the Borough is entitled, including (without limitation) enforceable requirements promptly and adequately to abate the endangerment.

Very truly yours,

Bradley M. Campbell

BMC/mw/md
Enclosure

c: The Honorable Gina McCarthy
Administrator
United States Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Avenue, N.W.
Washington, D.C. 20460

The Honorable Judith Enck
Regional Administrator
United States Environmental Protection Agency, Region 2
290 Broadway
New York, New York 10007-1866



The Honorable Eric Holder
Attorney General
United States Department of Justice
10th & Pennsylvania Avenues, N.W.
Washington, D.C. 20530

Robert G. Dreher
Acting Assistant Attorney General
United States Department of Justice
10th & Pennsylvania Avenues, N.W.
Washington, D.C. 20530

The Honorable Paul Fishman
United States Attorney
970 Broad Street
Suite 700
Newark, New Jersey 07102

The Honorable Chris Christie
Governor
State of New Jersey
125 West State Street
P.O. Box 001
Trenton, New Jersey 08625-0001

The Honorable Bob Martin
Commissioner
New Jersey Department of Environmental Protection
401 East State Street
P.O. Box 402
Trenton, New Jersey 08625-0402

By First-Class Mail:

Mark Pederson
Assistant Commissioner for Site Remediation
New Jersey Department of Environmental Protection
401 East State Street
P.O. Box 402
Trenton, New Jersey 08625-0402



Andy Park
United States Environmental Protection Agency, Region 2
290 Broadway
New York, New York 10007-1866

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Trenton, New Jersey 08625-0420

Bureau of Case Management
New Jersey Department of Environmental Protection
Mail Code: 401-05F
P.O. Box 420
Trenton, New Jersey 08625-0420

Fred Sickels
Director of Water Supply and Geoscience
New Jersey Department of Environmental Protection
Mail Code 401-03
Trenton, New Jersey 08625

Paul E. Linskey, Esq.
Chief Regulatory Counsel
Solvay North America legal Services
8 Cedarbrook Drive
Cranbury, New Jersey 08512



Exhibit A

Affiliates

Solvay USA, Inc.

Solvay Solexis, Inc.

Solvay Performance Chemicals, Inc.

Solvay Minerals, Inc.

Solvay Interlox, Inc.

Solvay Holding, Inc.

Solvay Fluoropolymers, Inc.

Solvay Fluorides, Inc.

Solvay Draka, Inc.

Solvay Chemicals, Inc.

Solvay America, Inc.

Solvay America (NJ), Inc.

Solvay Fluorides, LLC.